GEOG 176 A
2015 Fall

Rui Zhu
ruizhu@geog.ucsb.edu
Lab 3:
An Introduction to ArcGIS Desktop, OpenGeoda, and Google Earth

DUE:
6 p.m. Tuesday Oct 27th 2015
(Two weeks)
Objectives

• Become familiar with the interfaces for *ArcGIS Desktop applications*, *OpenGeoDa*, and *Google Earth*

• Learn how to manage your data

• Learn how to create a basic map
Pre-lab

• Software:
  ArcGIS 10.3 (ArcMap, ArcCatalog, ArcGlobe, ArcScene, and etc.)
  Open GeoDa (Open Source;
  https://geodacenter.asu.edu/software/downloads)
  Google Earth (freely available, but need internet access)

• Download from GauchoSpace:
  Lab material: Lab1_instructions.pdf
  Data: Lab1.zip
  Answer sheet: Lab1_Answersheet.docx
ArcGIS 10.3-Interface

Legend

Toolbars

Map Viewer
ArcGIS 10.3-Adding Data

Connect To Folder
ArcGIS 10.3-Basic operations

- Zoom in and out
- Pan
- Full Extent
- Identify
- Measure
- ....
ArcGIS 10.3-Attribute Table
ArcGIS 10.3-Render a Map
ArcGIS 10.3-Select Records

Select By Attributes

Layer: Countries_2007

Method: Create a new selection

"STATUS"
"SQKM"
"SQMI"
"POP2007"
"POP2015"

SELECT * FROM Countries_2007 WHERE:
"POP2007" = 7543
Cartography: Best Practices

1. Map Design and Data
   • Theme: What is the purpose of the map?
   • Data Selection: What data are relevant to the map’s subject?
   • Symbology: How is the data represented in graphical form?

2. Subject Area
   • Does it dominate the visual hierarchy?

3. Title
   • Wording: Does it introduce the map subject?
   • Placement: Does it stand out in the visual hierarchy of text?
   • Type Style: Does it enhance the map’s theme?
Cartography: Best Practices

4. Legend
   • Does the title of legend elaborate on the map’s subject?
   • Does it provide visual balance and make use of white space?
   • Do the symbols match those on the map?

5. Scale
   • Options: Scale Bar, Fraction/Ratio, Textual
   • Size and Location: Does it complement visual design?
   • Scale Bar: Units? Intervals? Are smallest units whole numbers?

6. Orientation
   • Choose One (Not Both): North Arrow or Parallels/Meridians
   • Consider map scale and curvature of the Earth
7. Supplemental Text and Illustrations
   • Production Info: Cartographer’s name, date, etc.
   • Attribution: Are data sources & assistance acknowledged?
   • Relevance: Are text and illustrations relevant; avoid clutter?

8. Borders (Neatlines & Frames)
   • Do they provide clear separation of graphical elements?
   • Is a frameless approach more appropriate?

9. Unity and Harmony
   • Do the map elements complement one another, provide visual balance and harmony?

Good Example of Correct SB Map
Output Map

• Title (2)
• Legend (2)
• Scale Bar (2)
• North Arrow (2)
• Neatline (2)
• Data Source and Geographic Coordinate System text (2)
• Name and Date (1)
• Color ramp: One color that ranges from light to dark (1)
• Thousands comma separators visible in the legend (1)
OpenGeoDa

• Computer → labs (\noca) (L:) → OpenGeoDa → OpenGeoDa.exe
• Powerful geo-statistics tool

➢ Std Dev map
➢ Cartogram
You’ll notice that the interface consists of windows, buttons, and menus; similar to ArcMap. You can see your class breakdown on the left side. You may need to expand the window to see the classes. Each class is followed by a number in parentheses. This number is the number of features in that class. In this case, your features are countries.

Click the Duplicate the Main Map button to create a copy of your map. With this new map active, click the Map drop down menu again and choose Cartogram using POP2007. A map of varying sized dots will appear. Cartograms often distort areas and/or shapes to represent quantities. Arrange your windows so you can see your Standard Deviation map and your Cartogram map.

Select the largest dots on the cartogram map. Notice that the countries will automatically be selected in the other maps.

Click the Open Table button and when the table appears, right-click anywhere in the table to get a context menu.

Choose *Move Selected to Top* at the top of that context menu to see the records for the features that are selected in the map moved to the top of the table.

Right-click the cartogram and choose Save Image As from the context menu.
Google Earth

• A cool tool to fly around the earth and view the virtual environment.
Tips:

• **Q1:** Write one paragraph in **YOUR OWN WORDS** to express the seven core concepts (i.e. location, field, object, network, event, granularity and accuracy.), although for most of them you have not learned yet from the class. Also, what are potential operations for the each concept? You could use examples to illustrate.

• Classification Error: After excluding -99 data from the data classes, the value "-99" still shows up in the classed values.

• Work Around: After updating the data exclusion (and seeing -99 still showing up), change the classification type to something else (e.g. to Quantiles) then back to Natural Breaks. This should force the class values to automatically update.
Submission of Lab

• Answer sheet on Gauchospace
• Name your Lab submission: YourNameLab3.doc
• Submit through Gauchospace
• One minute late = One day late (10% off)
• DO NOT wait until the last day to complete

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